



Original Communication

Hanging deaths in Dammam, Kingdom of Saudi Arabia

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ABSTRACT

A retrospective study was carried out on 133 suicidal hanging cases autopsied at Forensic Medicine Center in Dammam, Kingdom of Saudi Arabia (from 2003 to 2007). Of these cases, 115 (86.46%) were males and 18 females (13.54%), with an average male:female ratio of 6.38. There was an increasing trend of hanging among ages between 21 and 50 years (88.7%), and the fourth decade had the highest number of victims (about 36%) between all age groups.

Local Saudi nationals comprised a small proportion of cases (21 persons, 15.8%), while the others were foreigners working in the Kingdom with an Indian precedence (63 persons, 47.4%), followed by other 11 different nationalities representing 36.8% of the cases. The peak of these suicidal acts was in June and the least was in February and December. Postmortem blood alcohol was found in 6.76% of cases, amphetamine in 3% (4 cases), and cannabinoids in 2.25% (3 cases). About 75% of the deceased persons were male laborers (100 cases), 11.27% were female housemaids (15 cases), and only 13 persons were unemployed (9.77%). Previous history of psychological illnesses was documented in 19 cases (14.28%) and stressful family problems in 6% of cases. There were previous suicidal attempts in only one case. Suicidal note was found in only seven cases.

In conclusion, there was a decreasing trend of suicide by hanging in Dammam from 39 cases in 2003 to 17 cases in 2007, with a rate of 0.85/100,000 population in the last year. This was inconsistent with the overall increase in suicide rate in Dammam when compared to the previous decade.

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1. Introduction

Dammam is the largest city in the Eastern Province in the Kingdom of Saudi Arabia (KSA). It is a thriving modern economic hub and hosts the largest oil company in the world. The Forensic Medicine Center in Dammam covers most of the cities in this province which have a 2,000,000 population.¹

Suicide is one of the leading causes of death worldwide and an important public health problem.^{2,3} Suicide rates vary geographically and by age and sex. The average rate worldwide for all suicides was estimated to be 14.5/100,000 in the year 2000.⁴ On the other hand, the average suicide rate in the entire Saudi Arabia was 1.1/100,000 population per annum.⁵ According to Shari'ah doctrine, the definitive Islamic law, suicide is considered to be a criminal act

to oneself.⁶ Allah says explicitly in the Qur'an "*And do not kill yourselves. Surely, Allah is most merciful to you*".⁷ In another verse of the Qur'an, Allah says: "*And do not throw yourselves in destruction*".⁸

Hanging is a common method of asphyxial suicide in many countries.⁹ In various studies, at least 70% were males.^{9–11} The age range varies from late adolescent to very old. A history of a previous attempt may be elicited (up to half of deaths in one English study). The same series documented a suicide note in about one third of cases, consistent with other reviews.^{9,12} The victim's home is the most frequent site, but hangings also occur in outside locations.^{9–11}

The aim of this study is to correlate the number of suicidal hangings in relation to age and gender in Dammam, during the study period.

2. Methodology

According to the Ministry of Health guidelines for forensic medical examiners in KSA, published in 2005, all suicide deaths

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must be examined in medicolegal centers, before an official burial certificate and authorization for burial are given to the deceased's family. Occasionally, the deceased's family refused autopsy and abort prosecution due to contributions of social, cultural and religious traditions and beliefs. The medicolegal examination is carried out by a team including two forensic medical examiners, together with the aid of a forensic toxicologist and a forensic pathologist.¹³

In the current work, a total of 160 suicidal cases, autopsied at the Forensic Medicine Center in Dammam, between January 2003 and December 2007, were studied retrospectively. About 83% of these suicide cases ($n=133$) were inflicted by hanging. Cases were determined to be suicidal hanging according to many items including the general prosecutor's investigations, external examination, autopsy findings and the final reports. Data were examined with respect to their personal data (gender, age, occupation, history of previous psychological illnesses or previous suicidal attempts). Also, toxicological results were included in the study of the reported cases.

3. Results

One hundred and thirty three hanging cases (83.125%) were established out of all 160 suicidal cases conducted in the course of five years. The distribution of cases in respect to gender and years is shown in Table 1. Of these, 115 cases were males (86.46%), and had a rate six times more than that of females (18 cases, 13.54%). Fig. 1 showed that the highest percentage of suicidal hanging was in 2003 (29.32%) compared to the least in 2007 (12.9% of the total number of cases), i.e. there was a decreasing trend of suicide by hanging in Dammam, with a rate of 0.85/100,000 population in the last year.

There was an increasing trend of hanging among ages between 21 and 50 years (88.7%), and the highest number of victims were in the fourth decade (36.09%). As regards females, about 66% of them were in the fourth decade and the rest were in the third decade. There was no case aged lower than 10 years and the number of cases in the age groups over 60 was the lowest ($n=2$, 1.5%), as shown in Table 2.

Foreigners working in the Kingdom represented the highest percentage of suicide by hanging cases (84.2%) with an Indian precedence (63 persons, 47.4%), followed by Saudi nationals who comprised a small proportion of cases (21 persons, 15.8%), and other 11 different nationalities (36.8%) with less than eight persons in each in the order of Bangladeshi, Filipino, Sri-Lankans, Indonesians, Nepali, Yemeni, Sudanese, Iraqi, British, Turkey, Afghani and Qatari persons.

The peak of these suicidal acts was in June (the highest being male cases in the fourth decade, with a male:female ratio of 8.5:1) and the least numbers of these suicides were in February and December, with a similar distribution regarding the male:female ratio (2.5:1), as shown in Tables 3 and 4.

Table 1
Distribution of suicide in the study by years and gender.

Years	Gender				Total	
	Males		Females			
	n	%	n	%	n	%
2003	34	25.56	5	3.76	39	29.33
2004	16	12.03	4	3	20	15.03
2005	28	21.05	2	1.5	30	22.55
2006	22	16.55	5	3.76	27	20.3
2007	15	11.28	2	1.5	17	12.79
Total	115	86.47	18	13.53	133	100

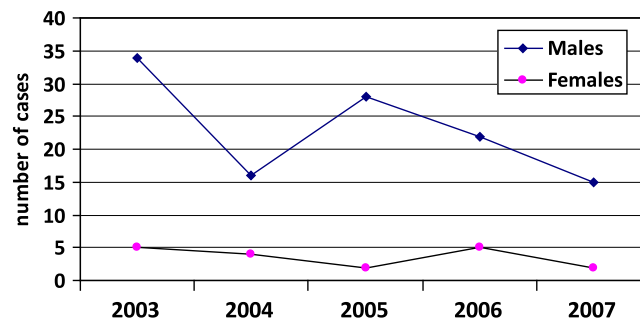


Fig. 1. Distribution of the yearly suicidal hanging cases.

Postmortem blood alcohol was found in 9 cases (6.76%), amphetamine in 4 cases (3%), and cannabinoids in 3 cases (2.25%). As regards occupation of the deceased persons, 75% of them were male laborers (100 cases), while 11.27% of cases were female housemaids (15 cases), and only 13 persons were unemployed (9.77%). Previous history of psychological illnesses was documented only in 19 cases (14.28%) and stressful family problems in 6% of cases. Previous suicidal attempts were reported by the family of only one case. Suicidal notes were found in seven cases (5.26%).

4. Discussion

Hanging is a leading method of suicide in many countries like Germany and Japan and it is the second leading suicide method after intoxications in India.^{14–16} In US, despite the fact that the suicide patterns differ according to the states, hanging was reported to be the second leading method of suicide after firearms in general.¹⁷ This is in agreement with the findings of the current study; suicidal hanging cases constituted 83.125% of all suicides in the city in the same period. On the other hand, this percentage is much higher than in a previous study in Dammam which revealed that suicide by hanging represented 63% of all suicidal cases, followed by jumping from heights (12%) and other means of suicide.⁵ This may be due to the less availability of other lethal methods such as personal firearms due to strict KSA regulations specially for foreigners and particularly in Dammam.

Despite the annual increase in population of Dammam city, and despite the diversity of nationalities, there is a decrease in the number of suicidal hanging fatalities across the studied period. There was a decreasing trend of suicide by hanging from 39 cases in 2003 to 17 cases in 2007, with a rate of 0.85/100,000 population in the last year. This rate is lower than the suicide rate in Saudi Arabia (1.1/100,000 population) in a 10-year study period from 1986 to 1995.⁵ The current results were in contrast to studies carried out in Turkey and Northern Ireland, which showed an increase in the overall rate of suicide and a rising in the number of suicidal hanging fatalities with the annual increase in population.^{18,19}

Table 2
Distribution of suicidal hanging cases by gender and age groups.

Age groups	Gender		Total	%
	Males	Females		
10–19	3	—	3	2.25
20–29	32	6	38	28.57
30–39	36	12	48	36.09
40–49	32	—	32	24.06
50–59	10	—	10	7.52
60–69	1	—	1	0.75
≥70	1	—	1	0.75
Total	115	18	133	100

Table 3

Distribution of suicidal hanging cases by gender and months during the period of the study (2003–2007).

Months	Gender		Total	%
	Males	Females		
January	8	2	10	7.52
February	5	2	7	5.26
March	7	3	10	7.52
April	7	1	8	6.01
May	11	2	13	9.77
June	17	2	19	14.28
July	12	1	13	9.77
August	11	–	11	8.27
September	10	1	11	8.27
October	10	2	12	9.02
November	12	–	12	9.02
December	5	2	7	5.26
Total	115	18	133	100

The gender ratio (male:female) in the overall period of study was 6.38. It was the highest (14:1) in 2005, and the ratio ended at 7.5 in 2007 (the last year of study). These rates are considered to be different from the global rates. It is much higher than another study performed in the main Turkish city “Istanbul”, having a population of about 15 million in 2005; they reported a male to female ratio of 2.39.¹⁸ Moreover, there is a male predominance in a study done in Manipal, south India, but with a lower male:female ratio (2:1).²⁰ These differences can be compared to a recent study performed on women in Korea, Sweden, Taiwan and the United States, which found that half of Taiwanese and American women used violent methods, while only one third of women in South Korea and Sweden used such methods. Poisoning was the most often used suicide method by women in all four countries. About 90% of American and Swedish women used drugs. In contrast, almost half of women from Korea and Taiwan used pesticides.²¹

The present study revealed that the highest number of victims were in the fourth decade (36.09%). We think because it is the mean range for age of foreign laborers in KSA. A Turkish study revealed that the age group of 20–29 years has the greatest number of suicidal hanging cases in both males and females.¹⁸ Similarly, the third decade had the maximum number of suicidal cases in a south Indian study.²⁰

On the other hand, the current study revealed that the number of cases in the age groups (over 60 and over 70 years) were the lowest ($n=2$, 1.5%), and consequently the lowest rate when compared to population. This was in contrast to another study performed in south-eastern Serbia (1995–2001), which revealed an average annual suicide rate among males of 42.5, and among

women it was 18.7. The most common way of suicide among men was hanging (63%).²²

The Indian nationality represented nearly half the number of cases in the current study (63 persons, 47.4%). This can be explained by the matter of fact that many foreigners from south east Asia are working in the Eastern Province, the majority of them are Indians,¹ and the Indian suicide rate is 9.2 per 100,000 per year i.e. about 9 times the rate in KSA.²³ These results are closely similar to a study done in Bahrain, an Islamic country in the Gulf region, in which the mean suicide rate was 0.6 per 100,000 for the Bahraini nationals and 12.6 per 100,000 for the non-Bahrainis and 17.7 per 100,000 for the Indian migrants.²⁴ The Bahraini study supports the influence of foreigners on the overall incidence and pattern of suicide. The lower number of Saudi suicidal cases (15.8% of cases, all are Muslims) can also be explained by the fact that suicide is stigmatized and condemned by the Islamic Doctrine in Saudi Arabia which is considered as the main Islamic country in the Gulf.¹³ In addition, the highest standard of living and working of Saudi citizens, as well as the dominant community condemning suicide acts, might have a great role in decreasing this rate.

Summer time in Dammam is too hot and long, having the same climate in many regions of the country; especially for the period between May and August the temperature reaches 46 °C together with an exaggerated humidity.²⁵ This hot environment may lead to aggravation of difficult job conditions of these laborers, working away from countries for at least 2–3 continuous years, in unconditioned workplaces. The peak of suicidal acts in the current study was in June and the least was in February and December. These results were closely similar to a South African study, which showed a highest total number of hanging incidents in summer²⁶ and another study in Lithuania having a distinct annual rhythm with peaks in summer and troughs in December.²⁷ On the other hand, this pattern is not coinciding with the seasonal variation of northern hemisphere countries.²⁸

Ethyl alcohol was detected in the blood of 6.76% of victims in the present study. Twofold of this figure (11.9%) was reached in a Turkish study, in Istanbul.¹⁸ This can also be explained by the religious and cultural background, because alcohol beverages' trading, manufacturing, and consumption are prohibited in the Kingdom of Saudi Arabia and there is firm execution of severe penalties against abusers and traders according to the Law. Dissimilar to the Turkish study,¹⁸ other drugs were detected in the current work, amphetamine in 3%, and cannabinoids in 2.25%.

More than 86% of cases in the current work were laborers (males) and housemaids (females). In the same context, a Hungarian study concluded that suicide was less frequent among persons with intellectual occupations.²⁹

Table 4

Distribution of suicidal hanging cases by months and age groups.

Months	Age groups							Total	%
	10–19	20–29	30–39	40–49	50–59	60–69	≥70		
January	–	5	2	2	1	–	–	10	7.52
February	–	3	–	4	–	–	–	7	5.26
March	1	4	2	3	–	–	–	10	7.52
April	–	1	3	2	1	1	–	8	6.01
May	–	3	5	5	–	–	–	13	9.77
June	–	3	12	2	2	–	–	19	14.28
July	–	5	3	3	2	–	–	13	9.77
August	–	5	3	2	1	–	–	11	8.27
September	1	1	7	2	–	–	–	11	8.27
October	–	3	4	4	1	–	–	12	9.02
November	–	3	5	2	2	–	–	12	9.02
December	1	2	2	1	–	–	1	7	5.26
Total	3	38	48	32	10	1	1	133	100

In the present study, approximately one fifth of cases had previous history of documented psychological illnesses (14.28%) and family problems (6%). In an Indian study, these illnesses were found in 33.6% of cases and as many as 57.4% of the subjects had shown behavioral change before the suicidal attempt.³⁰ Unfortunately, in our study, it was too hard to obtain valuable data due to fear of the deceased's relatives or friends from confrontation with the police investigations, especially in foreigners who constitute the greater part of suicidal cases in this study (more than two third of cases). Previous suicidal attempts were reported by the family in only one case in the present study.

While suicide notes are one of the markers of a suicidal manner and are said to provide a valuable insight into the thinking of suicide victims before the fatal act,³¹ this was found only in seven cases (5.26%) in our study. This percentage is a long way from a Japanese study in which notes were found in 30% of suicide cases,³² and from a Canadian study that showed that 39% of cases left suicide notes,³³ and far away from a British study on suicide in the elderly which reported notes in 43% of cases. The authors in the British study affirmed that those who died by more violent means such as hanging, appeared less likely to have left a suicide note.³⁴

5. Conclusion and recommendations

Hanging is the most common method of suicide in the Kingdom of Saudi Arabia. The popularity of this highly lethal method, specially between foreigners and mainly from south east Asia, may be one of the underlying causes for its use to commit suicide, as well as less availability of other lethal methods due to firm policies about possessing personal handguns. More studies should be carried out to clarify the situation of these foreign laborers and ameliorating their suffering from low living standards and difficult working media.

Although decreasing through the studied five years, it is considered a public health problem and should be given high priority with regard to prevention and research. Specific focus in suicide prevention strategies should be on both nationals and foreigners, with testing the psychological acceptability of hanging, specially laborers and housemaids in the Kingdom.

We also recommend psychological assessment of foreign laborers and maids before employment in KSA and also on a regular basis during their stay.

Conflict of Interest

There is no conflict of interest between any of the authors.

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Ethical Approval

No ethical Approval was needed.

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